

**SYSTEM AND METHOD FOR  
NON-CAUSAL CHANNEL EQUALIZATION  
IN AN ASYMMETRICAL NOISE ENVIRONMENT**

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**ABSTRACT OF THE INVENTION**

A system and method are provided for non-causal channel equalization in a communications system. The method comprises: receiving a non-return to zero (NRZ) data stream input; establishing thresholds to distinguish a first bit estimate; comparing the first bit estimate in the NRZ data stream to a second bit value received prior to the first bit, and a third bit received subsequent to the first bit; in response to the comparisons, determining the value of the first bit; tracking the NRZ data stream inputs in response to sequential bit value combinations; maintaining long-term averages of the tracked NRZ data stream inputs; adjusting the thresholds in response to the long-term averages; and, offsetting the threshold adjustments to account for the asymmetric noise distribution. Two methods are used to offset the threshold adjustments to account for the asymmetric noise distribution: forward error correction (FEC) decoding and tracking the ratio of bit values.

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